

CHAPTER 4

FOODSERVICE EQUIPMENT

The foodservice equipment located in the galley and dining areas at naval shore stations and aboard Navy ships is designed specifically for serving large quantities of food. To make sure of the safe, sanitary, and efficient operation of this equipment, it must be maintained in proper working order and used correctly.

GENERAL PRECAUTIONS

Before attempting to operate any foodservice equipment, you should observe the following general precautions:

- Check for and determine the location of emergency materials such as fire extinguishers, emergency switches, first aid boxes, and telephone emergency numbers to make sure they are available should an accident occur. Report any deficiencies or malfunctioning materials to the supervisor.
- Make sure the area around the equipment is clear of obstructions and thoroughly dry. All spills must be cleaned up immediately to ensure a clean, dry, nonslippery working surface.
- Make sure the working area has ample lighting.
- If there is any doubt about the operating procedures or safety precautions, report to the supervisor.
- No unauthorized personnel should attempt to operate equipment in any foodservice space.
- Be certain no loose gear is in the vicinity of moving parts of machines. Before starting, you should make sure all safety guards, screens, and devices are in place.
- When operating a machine, you should make sure you maintain a safe distance from all moving parts. Never use your hands or body to stop moving blades and parts even though power has been turned off.
- Never lean against a machine while it is operating.
- If ship movement is severe, exercise caution; if severe movement continues, nonessential machine

operation should be discontinued and equipment turned off.

- Use safety equipment such as rubber protective gloves, safety goggles, and dip baskets while handling chemicals or hot water. Consult the material safety data sheets (MSDSs) for additional precautions before using cleaners and detergents.
- Keep your hands, body, and clothing away from moving machine parts.
- Never leave moving machinery unattended.
- Do not distract the attention of personnel who are operating the machines.
- Do not attempt to clean or service a machine while it is in operation. Before cleaning, adjusting, oiling, greasing, and so forth, you should be sure the power is turned off and the equipment is de-energized and properly tagged out of service.
- All repairs, tag-outs, and servicing should be made only by authorized personnel.
- Make sure safety devices such as safety interlocks on covers of vegetable peelers and bread slicer safety cutoffs are maintained in proper working condition at all times. If removed for any reason, such devices must be replaced before the machine is put into operation.
- Remove rings and watches and eliminate any loose clothing such as unbuttoned sleeve cuffs, oversized gloves, and ill-fitting coats or jackets.
- Make sure all permanently mounted equipments are hardwired.
- Make sure any rubber safety covers over electrical switches are in place and have no holes or cracks.

TYPES OF EQUIPMENT

Foodservice equipment is used for the cooking and preparation of food and the cleaning of utensils and dinnerware. This consists of all equipment located in foodservice spaces like the general mess (GM),

bakeshop, meat preparation room, private mess galleys, dining areas, and sculleries.

Numerous items of foodservice equipment such as vegetable peelers, meat choppers, dough mixers, and refrigerators are either driven by electric motors or are heated electrically (such as ranges, broilers, griddles, and fry kettles). Safety precautions must be observed around all electrical equipment to avoid injury from shock. Major cleaning requires the equipment to be tagged out according to the tag-out bill.

Negligence in carrying out routine operating instructions and preventive maintenance introduces an undue health hazard among the people served. Therefore, it is vital that the correct operating procedures be followed, that a cleaning schedule be carefully adhered to, and that the machine be given adequate preventive maintenance to make sure of satisfactory cleaning and sanitizing of eating utensils.

It is necessary to know all the foodservice equipment needed, whether it is for cooking, serving, cleaning, mixing, cutting, or storing. Understanding their basic operation and cleaning is a must for every foodservice personnel. For more detailed coverage of foodservice equipments, refer to *Foodservice Operations*, NAVSUP P-421, appendix B.

STEAM-JACKETED KETTLES

There are two different types of steam-jacketed kettles in use afloat as well as ashore. It is important to know which type your command uses. The following are basic principles to follow for each type of kettle:

- Steam-jacketed kettle (steam supplied): Steam is supplied to foodservice spaces for the use of the steam-jacketed kettles. The foodservice division is required to make sure the operating procedures are closely monitored; the steam kettle can become a potential lethal instrument. To make sure the kettle is maintained properly, follow the required planned maintenance system (PMS) cards and operating instructions.

- Steam-jacketed kettle (electric): Steam is internally supplied through a sealed "vacuum" system. It is the responsibility of the galley watch captain to make sure the level of water does not go below the minimum level on the sight glass. To recharge the system you must add distilled water obtained from either the ship's distilling plant or from sources of supply. If tap water is used, it can cause a buildup of mineral

deposits on the heating coils and decrease the effectiveness of the kettles.

Steam-jacketed kettles are used to prepare a variety of food items such as soups, sauces, vegetables, meat, and beverages. This equipment is very important and should be handled with great care (fig. 4-1). The kettles vary in size from 5 to 80 gallons. Approximately the lower two-thirds of each kettle is surrounded by a jacket that is offset from the main kettle body to provide space for steam to circulate and heat the contents of the kettle. The kettles are permanently mounted on a pedestal or three legs and have a hinged lid or cover. They also have a tube at the bottom of the kettle with a faucet at the outer end for drawing liquids instead of dipping them out, and a steam inlet connection, a steam outlet connection, and a safety valve. Some steam-jacketed kettles (or trunnions) have a handle on the side making it possible to tilt the kettle and pour contents into a service container. This type of kettle is usually used to prepare gravies and sauces. Kettles now in use are made of three types of material: corrosion-resisting steel, aluminum, and single-clad corrosion-resisting steel. Never fill the kettle completely full. When the lid is closed while cooking, make sure you are extremely careful in opening the lid because hot steam trapped in the kettle could burst out and cause a serious injury. If it is necessary to stir the contents, use a metal paddle; never leave the paddle in the kettle while cooking.

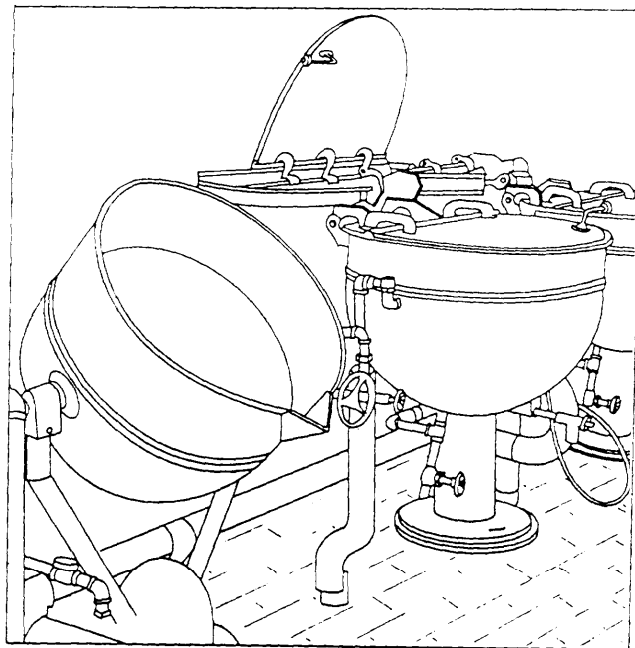


Figure 4-1.—Steam-Jacketed kettles.

Operation

The kettles are constructed to operate on a maximum steam pressure of 45 pounds per square inch. When the pressure in the galley steam line exceeds 45 psi, a pressure regulating valve (safety valve) installed in the steam line leading to the kettles is set to release pressure at 45 psi. Do not tamper with the safety valve or tie it closed. It is there to prevent the kettle from exploding. When operating a cold kettle, turn the steam on gradually, allowing the shell to become thoroughly warm before full pressure is applied. After the shell has become warm, and before applying full pressure, open the safety valve by pulling the lever. Opening the safety valve when enough pressure is within the shell removes air from within the jacket and prevents the kettle from becoming air-bound.

Cleaning

Kettles (or coppers) must be cleaned after each use. General cleaning instructions are as follows:

1. Rinse kettle immediately after cooking. Open draft faucet and flush with water.
2. Soak. Close drain valve. Fill with water above cooking level. If greasy, apply heat. Use a scrub brush to loosen food particles. Drain soak water.
3. Refill and clean. Add detergent, using 1 ounce to 1 gallon of water. Clean interior, hinges, under surfaces of lids, and frame with brush. Drain. Flush out.
4. Remove drain-off faucet and fittings and disassemble drain line. Scrub draw off faucet and fittings with a flexible-handled brush. Pull back and forth through tube under running hot water. Thoroughly clean in detergent water. Carefully rinse with 180°F water to sanitize. Drain valves and tubing should also be cleaned and sanitized in a similar way.
5. Scrub exterior and frame. Use hot detergent water and brush.
6. Resterilize interior. Before using kettle, you should carefully rinse with 180°F water.

NOTE: The previous procedures are recommended for stainless steel kettles. If metals are aluminum, brightening or whitening is required. Boil with vinegar water for a short time period or use a product recommended for cleaning aluminum following the manufacturer's directions. Do not use caustic cleaners or steel

pads. If kettles are stainless steel, clean as directed earlier.

SAFETY NOTE: Make sure the safety valve is in proper working order before using a kettle

ELECTRIC GRIDDLE

The griddle (fig. 4-2) consists of cooking surfaces of various sizes up to 34 inches deep by 72 inches wide. Each has a readily removable grease receptacle in the front of the griddle and a splash guard at least 3 inches high at the rear of the griddle which is tapered at the sides. All thermostat dial knobs are conveniently located on the front panel. Each thermostat dial knob has a signal light that indicates the griddle is turned on until the griddle has reached the dialed temperature.

Operation

To operate an electric griddle, proceed as follows:

1. Carefully read the operating instructions posted near the griddle.
2. Preheat the griddle by turning the thermostat dial knob to the recommended preheating temperature according to the manufacturer's technical manual.
3. Set the thermostat dial knobs at the desired temperature listed on the recipe card of the food to be grilled. A red light will turn on automatically when the griddle dial is initially set and will turn off when the the griddle has reached the dialed temperature. The signal



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Figure 4-2.-Electric griddle.

will flash on and off during the cooking process to show the correct temperature is being maintained. You are now ready to load the griddle.

4. Turn the griddle off or to the lowest temperature setting during idle periods.

Care and Cleaning

Keep the cooking surface scraped and wiped clean at all times. The grease gutters should always be kept clean to help in draining off excess grease and thereby reduce smoke. The grease receptacle should be emptied frequently and thoroughly cleaned at the end of the workday. Before starting the griddle cleaning procedure, always make sure the electrical power is turned off at the main power panel and the correct tag-out procedures have been followed. The cooking surface of most griddles can be satisfactorily cleaned with a pumice stone. Never use water. However, before cleaning, you should read the manufacturer's recommended cleaning instructions for that particular griddle surface. After each thorough cleaning, the griddle should be seasoned. Seasoning is done by preheating the griddle to 400°F. When the signal light goes off, spread a light film of cooking oil or fat over the entire surface of the griddle. In 2 minutes, wipe the surface clean of excess oil. Repeat this operation. The griddle is now ready for use.

TILTING SKILLET

Tilting skillets are large frying pans with deep sides and an attached lid. They are used to grill, fry, simmer, and braise large quantities of food. They can be mounted on a wall or on a stand and can be tilted at least 90 degrees from the normal horizontal position for emptying cooked foods and cleaning. Skillets are either gas or electric, have an electric thermostat, and have a temperature range of 100°F to 450°F. There is also a secondary thermostat that is a high-limit cutoff that disables the power circuit when the temperature exceeds 460°F. Gas skillets are also furnished with a pressure regulator, connector, quick-disconnect, and a 100-percent shutoff device for the pilot (automatic ignition of gas). Most skillets will also have a faucet directly attached to the skillet to aid in cooking and cleaning.

Operation

The skillet is heated from the bottom by either resistant heating elements or a series of gas burners. Usually, the tilting mechanism can be locked in any position. On some models, the tilting feature may have a safety switch to be engaged if the skillet is HOT or ON. If the skillet is provided

with a faucet, it may be connected directly to a water supply.

NOTES:

(1) Keep the tilting mechanism thoroughly lubricated for ease of operation.

(2) Always turn off the heating element before tilting.

Care in Cleaning

The tilting skillet should be cleaned after each use. Before cleaning you must turn off the heating element and scrape off the hardened food from the inside of the skillet with a spatula or scraper and flush down the sediment with a small amount of water. If the skillet has become very dirty, fill it to the level with hot water containing a mild hand-dishwashing detergent. Turn on the heating element and allow the water to come to a boil. Boil the water for at least 5 to 10 minutes. Turn off the heating element, drain, rinse with warm vinegar water, then rinse thoroughly with clear water, and dry the skillet well. Clean the outside of the skillet with a grease-cutting detergent. Do not leave heating element turned on when the skillet is empty.

DEEP-FAT FRYER

Sizes of deep-fat fryers (fig. 4-3) are expressed in the number of pounds of french fries that can be cooked in an hour and range from 30 to 125 pounds. Some



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Figure 4-3.—Deep-fat fryer.

deep-fat fryers are manually loaded. Others have automatic basket lowering and raising capabilities controlled by a timer.

Operation

Before filling the deepfat fryer, you should always check three things:

1. Master switch must be in the OFF position.
2. Thermostatic switch must be in the OFF position.
3. Drain valve must be closed tightly.

Fill the fryer with fat using the amount specified in the technical manual furnished with the fryer. Fats should be kept at least 2 inches below the fryer top. If possible, the fat should be heated and melted before placing it in the fry kettle. Cold solid fat may have moisture pockets that will explode, casting hot melted fat over a wide area. The temperature should not be more than 200°F while the fat is melting. Also, if the cold fat is not uniformly distributed around the heating element, the bare portions may heat up to a point where a sudden splash of fat on the overheated element will cause the fat to ignite. Fat ignites at 475°F. The fat should cover the uppermost coil at all times when the deep-fat fryer is in operation so as not to overheat the element and cause a fire. After the fat has been added, operate the deep-fat fryer as follows:

1. Turn on the master switch located outside the galley.
2. Set the thermostat at the cooking temperature prescribed in the *Armed Forces Recipe Service* (AFRS), NAVSUP P-7, for the recipe you are using.
3. Check the temperature of the fat with a hand thermometer frequently during the cooking process. Compare this hand reading with the thermostat reading to determine if the thermostat is accurate. The temperature should never, under any circumstances, go above 400°F. A safety requirement on all Navy fryers includes a second or over-temperature thermostat. This is a nonadjustable, manual, resetting type installed to limit the maximum temperature to 460°F. In case of failure of the adjustable automatic thermostat, the over-temperature thermostat disconnects the electric power to the heater elements.
4. Have foods as free from moisture as possible before frying. Excess moisture causes the fat to foam, sputter, and boil over. It also causes fat to break down and its useful life is shortened.

5. Do not fry bacon in the deep-fat fryer, as the fat from the bacon causes the fat level to rise above the safe level. It also contains salt that will shorten the life of the fat.

6. Follow instructions furnished with the fryer. Do not exceed the capacity of the fryer indicated on the instruction plate.

7. Never let the fat level fall below the point marked in the fat container, and never leave the deep-fat fryer unattended while in use.

8. In the event a fire should occur in the deep-fat fryer, do not attempt to smother the fire with a cover of any sort. Call the emergency number for reporting a fire at your command and shut off the electrical source, which is the main power switch outside the space, to the fryer. If the fryer is provided with an automatic fire extinguishing unit and does not set off automatically, pull the manual release. If that does not function, use PKP portable extinguishers.

NOTE: Under any circumstances, do not use water to extinguish the fire.

Cleaning

The deep-fat fryer should be cleaned after each use. Before cleaning the deep-fat fryer, you must turn off the heating element and allow the fat to cool to about 150°F. Drain the fat out of the fryer. Then remove the basket support screen, scrape off the oxidized fat from the sides of the kettle with a spatula or scraper, and flush down the sediment with a small amount of fat. If the kettle has become very dirty, fill it to the level with hot water containing dishwashing machine detergent. Turn on the heating element and allow the water to come to a boil. Boil the water for at least 5 to 10 minutes. Turn off the heating element, drain, rinse with warm vinegar water, then rinse thoroughly with clear water, and dry the fryer well. Clean the outside of the fry kettle with a grease solvent. Do not leave heating element turned on when the deep-fat fryer is empty.

ELECTRIC OVEN

Electric ovens have two to six compartments with two heating units in each compartment, one located below the bottom deck of the compartment. Each heating unit is controlled by a separate three-heat switch, and the temperature of each section is regulated by a thermostat.

Operating Instructions

The oven should be preheated before it is used by turning both upper and lower units to high until the desired temperature is reached. Then, the thermostat control will automatically cut off the current and will supply only enough heat to keep the temperature constant. After the oven has been heated, set the two three-heat oven switches at the top and bottom to the heat setting necessary to bake the product. In roasting meat, avoid spilling grease on the heating elements or thermostat, as damage to this equipment may result.

Care and Cleaning

Turn off heat. Scrape interior. Sprinkle salt on hardened spillage on oven floor. Turn thermostat to 500°F. When spillage has carbonized completely, turn off oven and let it cool thoroughly. Scrape the floor with a long-handled metal scraper. Use a metal sponge or hand scraper on inside of doors, including handles and edges. Brush out scraped carbon and loose foods. Begin with the top deck if stacked. Brush out

with a stiff-bristled brush and use a dustpan to collect. Wash doors with hot detergent solution on enameled surfaces only, rinse, and wipe dry. Brush combustion chamber using a small broom, and brush to clean everyday. Wash top, back, hinges, and feet with warm hand-detergent solution, rinse, and wipe dry. Clean and polish stainless steel exterior.

CONVECTION OVEN

A convection oven (fig. 4-4) has a blower fan that circulates hot air throughout the oven, eliminating cold spots and promoting rapid cooking. Overall, cooking temperatures in convection ovens are lower and cooking time is shorter than in conventional ovens. The size, thickness, type of food, and the amount loaded into the oven at one time will influence the cooking time.

General Operation of Convection Ovens

The general operating procedures for convection ovens are as follows:



Figure 4-4.-Convection oven.

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1. Select and make the proper rack arrangement for the product to be cooked.

2. Turn or push the main power switch on (gas oven—turn burner valve on). Set the thermostat to the recommended temperature. The thermostat signal light will light when the power goes on. If possible, adjust the fan speed on the two-speed blower.

3. Preheat oven until the thermostat signal light goes out indicating that the oven has reached the desired temperature. The oven should preheat to 350°F within 10 to 15 minutes. **(NOTE:** To conserve energy, do not turn on the oven until absolutely necessary—approximately 15 minutes before actual cooking is to start.)

4. Open the oven doors and load the oven quickly to prevent excessive loss of heat. Load the oven from the top, centering the pans on the rack toward the front of the oven. Place partial loads in the center of the oven. Allow 1 to 2 inches of space between the pans and along the oven sides to permit good air circulation. Remember—overloading is the major cause of nonuniform baking and roasting.

5. Close the oven doors and set the timer for the desired cooking time. Check periodically until the product is ready for removal.

TEMPERATURE SETTINGS.— Follow the recommended temperature guidelines provided either in the manufacturer's operating manual or those furnished in the AFRS, NAVSUP P-7, or reduce the temperatures specified on the recipe cards by 50°F. If food is cooked around the edges, but the center is still raw or not thoroughly cooked, or if there is too much color variation (some is normal), reduce the heat by 15°F to 25°F and return food to the oven. If necessary, continue to reduce the heat on successive loads until the desired results are achieved. Record the most successful temperature on the recipe card for future reference.

TIME SETTINGS.— Follow the recommended times provided in the manufacturer's operating manual, or follow the guidelines in the AFRS. Check progress halfway through the cooking cycle since time will vary with the quality of food loaded, the temperature, and the type of pan used. Remember, the use of meat thermometers for roasting and the visual examination of baked products are the most accurate methods of determining the desired cooking times, both in convection and conventional ovens.

VENT DAMPER CONTROL SETTING.— The vent damper control is located on or near the control

panel. The damper should be kept closed for most foods of low moisture content such as roasts. Leaving the vent open during roasting will produce a dry meat and result in excessive shrinkage.

The damper should be kept open when baking items with high moisture content (cakes, muffins, yeast bread, and so forth). Leaving the damper closed throughout a baking cycle will produce cakes that are too moist and ones that will not rise. A "cloud" of water droplets on the oven window indicates excessive moisture that should be vented out of the oven through the open damper.

INTERIOR OVEN LIGHTS.— Turn on lights only when loading, unloading, or checking the product. The continual burning of lights will result in a shortened bulb life.

TIMER.— The oven timer will ring only as a reminder; it has no control over the functioning of the oven. To assure proper operation, you should wind the timer to the maximum setting, then turn it back to the setting desired for the particular product.

Care and Cleaning

Keep the inside of the oven and racks clean. If food particles or carbon accumulates so that doors cannot be tightly closed, heat is wasted and the oven will not operate properly. Poorly closed doors permit a constant escape of steam and vapor around the door. The vapor will condense and deteriorate the finish around the oven front and door lining.

The rule for all electrical appliances is to make sure the proper tag-out procedures have been followed.

When cleaning the interior of the oven, it is important to bear in mind that the aluminum coating, though tightly adherent, is still a coating. To preserve the coating and to make maintenance easier, clean the interior daily when the oven is cold with a mild detergent or soap and water. This will prevent food and dirt from "baking on" and will frequently be all the cleaning that is necessary.

If soil resists soap and water cleaning, use a wooden tool to loosen spillage from the cold oven. Follow with a nonetching cleaner that is specifically recommended for aluminized steel. Use clear water to rinse; dry with a soft clean cloth. Avoid using wire brushes and caustic solutions such as lye, soda ash, or ammonia.

- When the oven liner features stainless steel the following rules apply:

In general, the principles detailed previously apply. Soap or detergent and water will usually take care of routine cleaning. Drying should be done with a soft clean cloth.

For burnt-on foods and grease that resist simple soap and water cleaning, an abrasive cleaner mixed into a paste may be used. Apply with a sponge, always rubbing with the grain. This treatment is usually effective for heat tint (slightly darkened areas caused by oxidation). Again, remember to rub in the direction of the polish lines. Rinse with clear water and dry with a soft cloth.

- When Teflon panels are featured, the following rules apply:

To protect the easy-care properties of Teflon-coated oven panels, frequent cleaning, dependent on oven usage, is recommended. Panels should be cleaned as soon as soil begins to turn brown. This will minimize the possibility of Teflon discoloration. Do not use sharp instruments, abrasive materials, or oven cleaners on a Teflon surface, otherwise the warranty is void. Should the surface be accidentally scratched, the performance and cleanability features would be adversely affected.

To clean the Teflon panels, remove panels and wash thoroughly with hot sudsy water using a sponge or web pad that is supplied with the oven. Do not use harsh abrasives. Rinse well and dry. Between these cleanings, everyday oven spatters can be easily sponged off with a sudsy sponge or a cloth, rinsed, and dried. With Teflon, there is never a need for oven cleaner. The step-by-step sequence for removing panels is as follows:

1. Remove tray racks by pulling straight out.
2. Remove right and left rack guides by lifting straight out.
3. Right- and left-hand panels may now be removed by moving toward the center and pulling out. To avoid scratching, do not rest panels on bottom panel.
4. Remove bottom panel by pulling straight out.
5. Remove blower baffle by lifting straight up and pulling out toward the front. Care should be exercised to clear brackets on the side.
6. Blower wheel can now be cleaned in place.
7. Top panel and interior door panels can be cleaned while in place.

8. If removal of top panel is desired, unscrew three screws from the front top edge of top and two screws from rear flange of top.

9. Slide out toward front.

To reassemble, reverse these procedures.

To keep the stainless steel front bright and gleaming at all times, just clean it regularly with a damp cloth and polish with a soft dry cloth. To remove discolorations that may have formed when regular cleaning was neglected, use any detergent or plain soap and water.

Wash all exterior surfaces daily. Use a cloth wet with warm water and a mild soap or detergent. Where surfaces have been polished, rub lightly with a cloth-hard rubbing will remove polish. Follow with a clean damp cloth, then dry. This simple beauty treatment not only keeps your equipment dirt-free and sparkling, but virtually eliminates the danger of grease accumulation that may form a stubborn stain if left on too long. **(NOTE:** Do not sprinkle or pour water over oven as it may cause an electrical short.)

General Notes

Most convection ovens are equipped with an electric interlock that energizes/de-energizes both the heating elements and the fan motor when the doors are closed/open. Therefore, the heating elements and fan will not operate independently and will only operate with the doors closed. Some convection ovens are equipped with single-speed fan motors while others are equipped with two-speed fan motors. This information is particularly important to note when baking cakes, muffins, meringue or custard pies, or similar products, and when oven-frying bacon. High-speed air circulation may cause damage to the food (for example, cakes slope to one side of the pan) or blow melted fat throughout the oven. Read the manufacturers' manuals and determine exactly what features you have and then, for the previous products, proceed as follows:

- On two-speed interlocked fan motor: set fan speed to low.

- On single-speed interlocked fan motor: preheat oven 50°F higher than the recommended cooking temperature. Load oven quickly, close doors, and reduce thermostat to recommended cooking temperature. (This action will allow the product to be baked to setup before the fan/heating elements come on again.)

- On single-speed independent fan motor: preheat oven 25°F above temperature specified in recipe. Turn the fan off. Reduce heat 25°F. Load oven quickly and close doors. Turn fan on after 7 to 10 minutes and keep it on for remaining cooking time. **(EXCEPTION:** Leave fan off for bacon to eliminate fat from blowing throughout the oven.)

Read and understand the manufacturers' manuals. They will make your job easier and safer.

ELECTRIC RANGES

Electric ranges are normally found in private messes, small ships, and submarines. Range descriptions and uses will now be explained.

Types S

Type S (fig. 4-5) is found on submarines. The type S is a compact galley unit consisting of a griddle on the left side and hot plates on the right side. A

NOMENCLATURE

- 1 SPLASH GUARD FOR GRIDDLE
- 2 GRIDDLE
- 3 GREASE RECEPTACLE, GRIDDLE
- 4 DRIP PANS, GRIDDLE, HOTPLATE
- 5 THERMOSTATIC CONTROL DIAL, LEFT SIDE, GRIDDLE
- 6 THERMOSTATIC CONTROL DIAL, RIGHT SIDE, GRIDDLE
- 7 THERMOSTATIC CONTROL, LARGE HOTPLATE
- 8 SMALL HOTPLATE, FRONT
- 9 SMALL HOTPLATE, REAR
- 10 LARGE HOTPLATE
- 11 TOP OVEN
- 12 BOTTOM OVEN
- 13 THERMOSTAT DIAL CONTROL FOR TOP OVEN
- 14 THERMOSTAT DIAL CONTROL FOR BOTTOM OVEN
- 15 OVEN VENT
- 16 DAMPER CONTROL, TOP OVEN VENT
- 17 DAMPER CONTROL, BOTTOM OVEN VENT
- 18 OVEN DOOR RELEASE
- 19 SEA RAIL SUPPORT
- 20 SEA RAIL

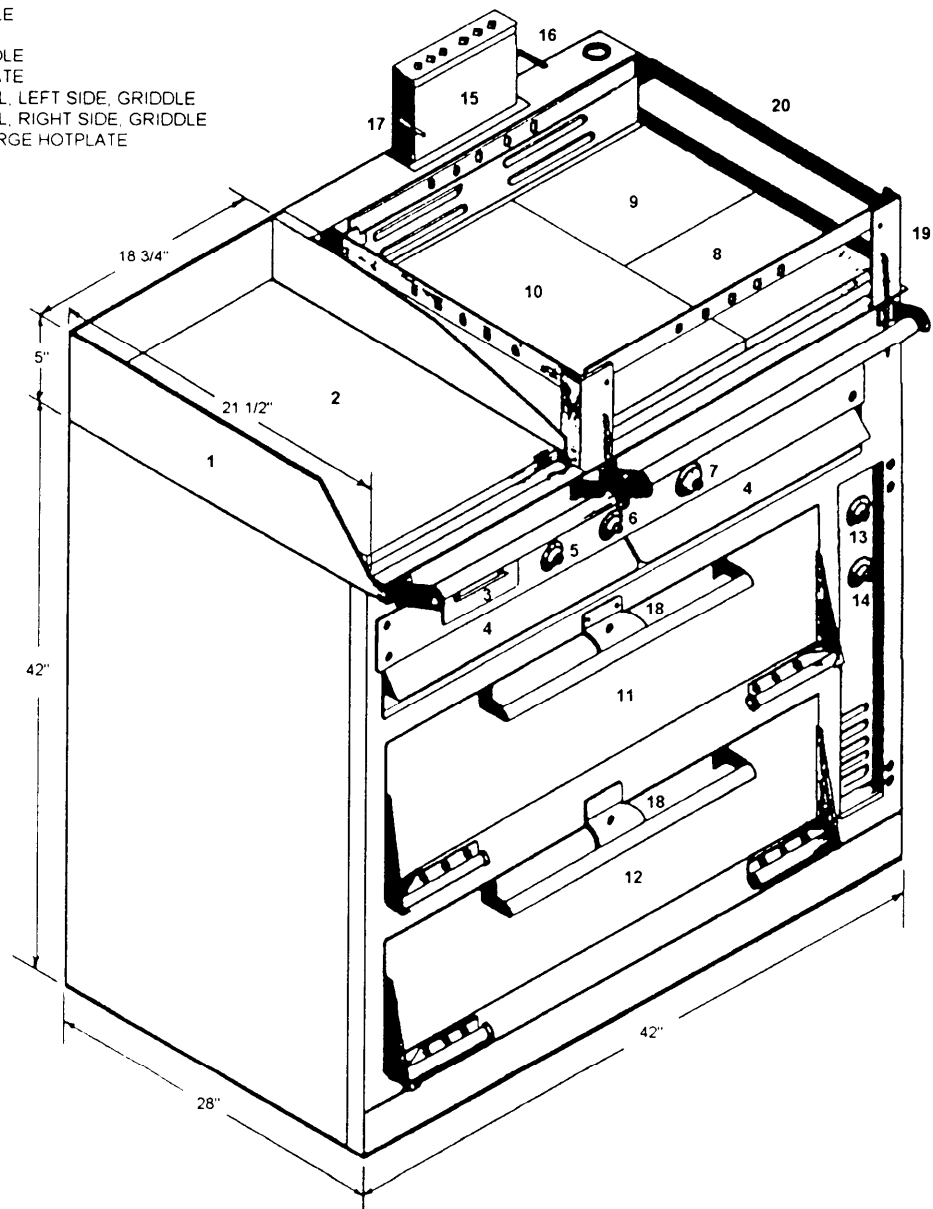


Figure 4-5.—Type S electric range.

two-compartment oven section makes up the body of the range. Dial temperature control knobs are mounted on the body directly adjacent to each section. The temperature control knobs for the ovens are located directly to the right of each oven compartment.

Type C

Type C (fig. 4-6) is found on small ships and private messes where small galleys with limited space are found. This type of range consists of a griddle on the left side and hot plates on the right side with a single oven located in the body of the range. This type of range is also available with a single griddle top and single oven compartment. Dial temperature control knobs are mounted on the body directly adjacent to each section. Control knobs for the oven compartment are located to the right of the oven compartment.

Operation of Surface Units

When operating the surface unit, use the control knob or thermostat setting at maximum heat only to heat food to cooking temperature or to bring water to a boil, then reduce the control knob setting to the heat required by the food being cooked. Using more heat than necessary is not only a waste of power but produces inferior food. Do not leave the surface unit turned on when not in use. When steaming food, keep cooking utensils covered. The food will stick and burn if left uncovered and power will be wasted.

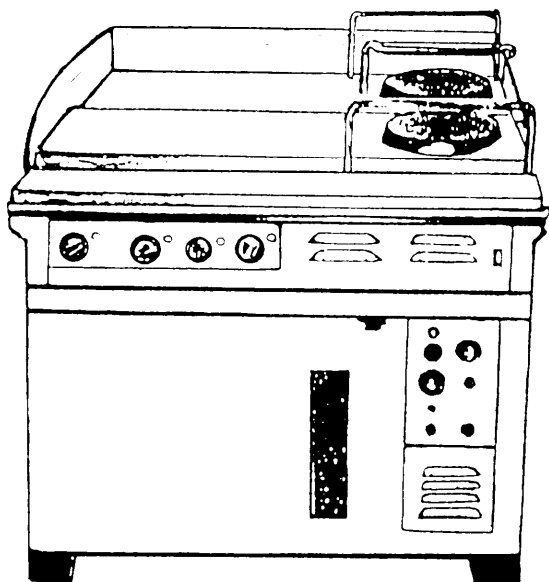


Figure 4-6.—Type C electric range.

Care and Cleaning

Keep the range surface units clean and avoid spilling grease under the edges of the hot plates. Remove and clean drip pans after each use.

To clean the surface units follow the cleaning procedures used for griddles and the manufacturer's technical manual for your range.

To clean the oven compartment use the procedures recommended by the manufacturer's technical manual or the cleaning procedures posted near the range.

ELECTRIC FOOD MIXER

Electric food mixers are used for an infinite number of jobs including beating batters for cakes, mixing bread dough, beating eggs, and mashing and whipping potatoes.

Sizes and Attachments

Food-mixing machines (fig. 4-7) are furnished in 20-, 60-, 80-, 110-, and 140-quart sizes with the necessary attachments, paddles, and beaters (fig. 4-8). The wire whip is used for eggs, cream, and lightweight mixing; the flat beater for cake batters and

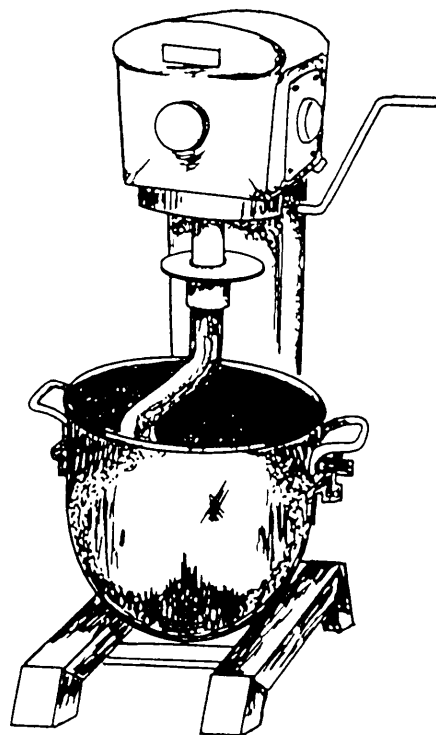


Figure 4-7.—Electric mixer.

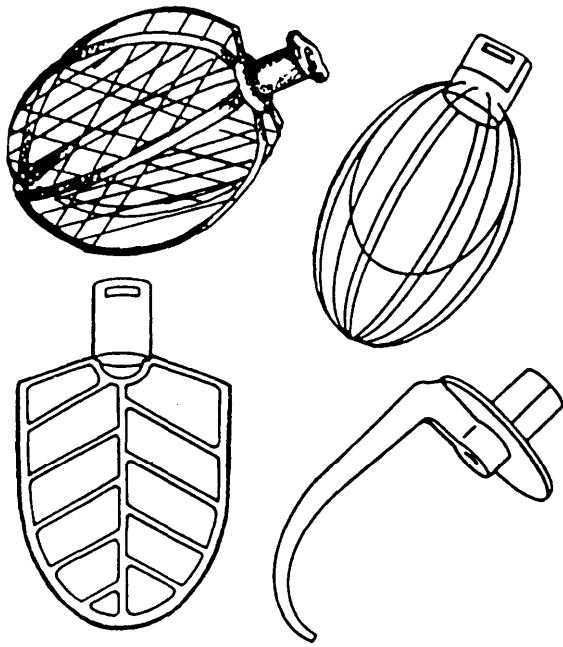


Figure 4-8.—Electric mixer attachments.

mediumweight mixing; the dough hook for mixing bread dough; and the wire beater for medium-stiff dough.

One part of the machine revolves through the use of a set of transmissions and differential gears. Various shaped paddles and mixers can be attached to this revolving unit.

The lower part of the mixer contains two extended, adjustable arms. A bowl, containing the foods to be mixed, is placed on these arms and the arms are then moved up so the paddles will revolve throughout the mixture. The machines have either three or four speeds. Usually they have an attachment hub that can be used for a vegetable slicer, juicer, and meat grinder.

Operation

Before operating the machine make sure the bowl, paddles, and beaters are thoroughly clean. If necessary, wash them in hot soapy water and rinse with hot water (170°F).

Place the ingredients in the bowl as specified on the AFRS recipe card. Do not fill the bowl more than half full. Place the bowl on a castored dolly when moving across the deck. Insert the bowl in the mixing machine, making sure the bowl ears are on the supporting pins and both sides are locked in place.

Select the proper attachment and place it in the machine. The L-shaped notch in the beater is to be

inserted over the pin in the shaft. On the smaller models the shaft will be grooved. The attachment is inserted into these grooves and slipped into the lock. Raise the bowl to the proper height by turning the wheel or crank.

Start the motor at no load and with clutch release shift to low speed; release the clutch each time the speed is changed. The speed to be used is indicated on the recipe card and on the instructions furnished by the manufacturer.

Watch mixing times and mixing speeds carefully. Often blended ingredients revert to separate ingredients if mixed too long or at an improper speed. If, during the process of mixing, some of the batter has piled up on the sides of the bowl, stop the machine. Using a long-handled spoon or spatula, scrape down the sides of the bowl. Never put spoons, spatulas, or your hands in the bowl while the machine is in operation.

When the mixing is completed, move the control switch to the OFF position and stop the motor. Lower the bowl by the lever with which you raised it and remove the beater by turning the sleeve to the left. Remove any food left on the beater with a spatula. Then, place the bowl on the castored dolly and move it to the place of use.

Care and Cleaning

The electric mixer, beaters, whips, and bowls all require care. Beaters, paddles, and bowls should be washed immediately after each use. Use hot soapy water and rinse with hot water (170°F). Hang beaters and paddles upside down to air dry. Clean the body of the machine after each meal. Use a damp cloth or wash with water as necessary for proper sanitation. Be sure the beater shaft is free of all dirt and food particles.

The motor and mechanical parts of the mixer should be inspected and maintained by the engineering department once a week.

ELECTRIC MEAT-SLICING MACHINE

The meat-slicing machine (fig. 4-9) is motor operated and is used for slicing hard or soft foods such as roasts, cheese, bacon, luncheon meats, and ham.

The machine has a carriage on which the meat is placed. A swiftly revolving disk knife slices the meat as the carriage is moved across the face of the revolving knife.

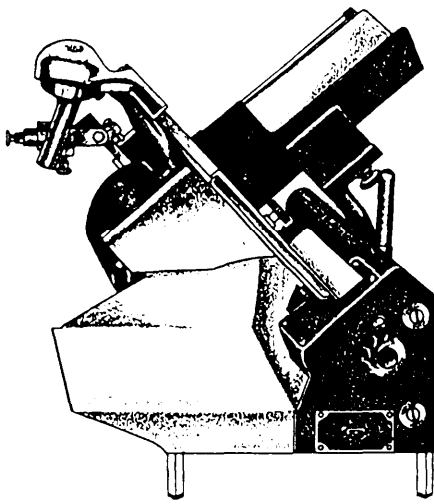


Figure 4-9.—Electric meat-slicing machine.

Operating the Meat Slicer

Meat slicers may be either manual or automatic feed. To use the slicer, place the meat on the carriage and adjust the clamp to hold the meat firmly. Next, set the dial for the desired thickness of the slices. Set the machine on automatic or manual. Turn on power to the machine. If manual mode was selected, move carriage back and forth with the hand lever.

The meat-slicing machine must be hardwired (permanently attached) and have a backup electric switch. The switch will be equipped with a guard to prevent accidental starting. The meat slicer is a very dangerous piece of equipment. Never operate it with the blade guard off or put your hands anywhere near the blade while the blade is turning. The blade is very sharp, so extreme caution should be used when sharpening or cleaning it.

Care and Cleaning

The meat-slicing machine must be cleaned after each use. Before dismantling the slicer, you must make sure the electric power is secured. Remove all cutting and meat-handling attachments. Wash the attachments with soap and hot water; rinse with hot water. The attachments may be run through the dishwashing machine. Clean the knife and the body of the slicer by following the manufacturer's recommended cleaning instructions or the instructions posted by the machine. Reassemble the slicer immediately so that the bare blade will not be exposed and apply a thin coating of salad oil on the blade. Do not forget to clean the counter top under the slicer.

STEAMERS

Steamers are used for steaming fish, fruit, meat, poultry, and vegetables. Most steamers used in the Navy consist of a three door, three-compartment unit. Each unit has one or two perforated pans or baskets.

Operation

When operating steamers, you are not limited to the use of pans and baskets furnished with them. If juices are to be saved, you should cook in leakproof solid pans of a suitable size. Pans should not be overloaded; steam circulates best when pans are about three-fourths full. Different foods may be cooked in the same steam compartment without mixing flavors or affecting the taste of the different foods. Onions and pudding placed in individual pans may be cooked in the same steam compartment without a transfer of flavor.

After the food has been placed in the steamer, close the compartment door securely. (The door latch is linked with the steam supply on most steamers, and the final movement of the lever locks the door and turns on the steam at the same time. Unlocking the door turns off the steam before the door can be opened.)

If the steam supply is controlled separately, open the steam valve slowly by turning the valve wheel counterclockwise after the door is latched. Then observe the middle indicator on the pressure gauge, which should be in the range of 5 to 7 psi. Turn the valve wheel clockwise to reduce steam pressure if it is above 7 psi. Watch your cooking time closely and avoid spoiling food by overcooking. Less time is required for steam pressure cooking than for boiling food in water; the temperature of steam at 7 psi is 233°F and the boiling temperature of water is 212°F.

After cooking has been completed, turn off the steam supply by turning the valve wheel clockwise on separately controlled units, or by unlatching the compartment door of the latch-controlled steam supply. You can relieve the steam pressure by operating the lever of the safety valve, if one is provided; otherwise, wait 2 minutes before you open the door to the full OPEN position. The gauge should read 0 psi before the door is opened.

Care and Cleaning

Occasionally, when you examine the drainpipe for steam-condensate drip, none will appear after a few minutes of steamer operation. When this is the case, turn off the steam supply by unlatching the door or

closing the valve, as necessary. The fault normally is stoppage in the trap, strainer, or drainpipe. To eliminate this condition, close the steam valve, remove the steam-trap strainer basket, and clean it by scraping out the solids and washing the basket until the mesh or perforations are open and clear. Clean the pipe connection in the steamer compartment, reassemble the strainer, and repeat the pressure cooking. If there is still no drip, the steam trap is at fault, so report this to the engineer officer via the chain of command.

After each meal, the steamer should be brush-scrubbed, washed clean with hot soapy water, and rinsed with hot water (170°F) and allowed to air dry.

HIGH-COMPRESSION STEAMER

The high-compression steamer (fig. 4-10) is a modular unit that is used to defrost and cook food by using high-velocity steam. When steam enters the unit, it is piped to a jet box from which it is jetted directly onto the frozen food at approximately 200 miles per hour (mph). The steam gains the high velocity by being forced through a series of small perforations.



48.132

Figure 4-10.—High-compression steamer

Operation

Check the steam supply gauge; 15 psi is needed for proper operation. Insert foods into the cooking chamber; then place the frozen food directly under the jet box; close and seal the door. Select the time (from 5 to 60 minutes) for the food to be cooked. Turn the selector switch to 60 minutes and then back to the desired cooking time. The pilot light indicates that cooking is in progress. Food is defrosted and cooked auto-matically. The pressure gauge rises to approximately 5 psi and increases to 15 psi after 2 minutes, where it will stay until cooking has been completed. The door must be kept locked until the cooking cycle has been completed. All steam will exhaust automatically and the buzzer will sound when the cooking cycle has been completed.

Care and Cleaning

The steamer should be cleaned at the end of each day that it has been used. To clean the jet steamer, remove the jet plate, pan supports, and door, including the gasket around the door, and wash in warm soapy water. Rinse well in warm water. Scrub the interior of the cylinder with warm soapy water and rinse well.

The door gasket must be kept clean at all times. With normal closing and locking of the door assembly, a steamtight seal should be made between the door gasket and the door opening. This seal cannot be maintained if particles of foreign matter are allowed to accumulate upon either of the contacting surfaces.

If leakage of steam occurs, the door assembly is improperly adjusted and a readjustment must be made to the adjustment screw.

VENTILATOR HOODS

Ventilator hoods, like people, come in a variety of shapes, sizes, and appearances, and vary in their effectiveness from barely acceptable to highly efficient. The filter-type hoods fall into the barely acceptable category, and the filterless grease extractors—mostly known as Gaylord ventilators—are the most efficient. Filter-type hoods are the hardest to keep clean and are gradually being re-placed as funds allow. They generally have no built-in fire protection system. If the filters are not replaced after cleaning, a buildup of grease deposits in the exhaust duct system could lead to a fire! Depending upon the type of fumes exhausted and the amount of use, the filter should be removed and washed in the dishwasher or deep sink daily, or no less than once

a week. The hood chamber behind the filters should be cleaned while the filters are out and you should be sure the filters are then put back. Also, remember, with all ventilators, to remove the access cover plates on the exhaust ducts, inspect for grease buildup in the ducts, and clean as necessary.

The hood, generally referred to as the Gaylord (named after the original manufacturer), is the type that uses an arrangement of internal baffles to cause the exhaust air to quickly change direction several times before it enters the exhaust duct. In so doing, the air slings the grease out into the grease trough that is built into the bottom part of the hood. This action is what gives the hood the name of centrifugal grease extractor. Other than the air, the only moving part in this system is the fire damper that is spring-loaded to close the throat or inlet air slot in case of fire, and this damper, when open, also serves as the first of the air baffles. All the action up to this point is carried out automatically by the hood as long as the exhaust blower is operating correctly.

Another automatic feature is the fire-sensing thermostat located in the exhaust ductwork close to the hood. From the outside, this looks like an aluminum box about 2 1/2 inches wide by 4 inches long by 1 1/2 inches deep. On the back of this, and projecting inside the duct, is a thermostat probe that is constantly checking air temperature in the exhaust duct. If a fire starts, and the air going by the thermostat reaches 250°F, the thermostat switch operates a magnetic trip inside the fire damper control box (the one with the plunger mounted above the hood), the fire damper slams shut, and the blower shuts down. In later model hoods with automatic cleaning (more about this later), this condition also will cause the automatic water washdown system to come on and spray water into the hood until the temperature at the thermostat is less than 250°F. On earlier models, the water or steam must be turned on manually. All shipboard model grease extractor hoods are fail-safe in that power failure or thermostat failure will cause the fire damper to close. This information will also be found on the nameplate on the damper control box. Complete technical information on airflow, electrical characteristics, and other data of primary use to engineering personnel can be found in the *NAVSEA Technical Manual*, 0938-027-5010.

So much for the automatic features that the hood will perform. Now, on to the part that you, as an MS, should do to keep it working and ventilating properly.

All centrifugal grease extractor hoods require at least daily cleaning. You may find three different types

of cleaning systems, all having a look-alike appearance but slightly different in method:

- Steam cleaning (manual)
- Hot water cleaning (manual)
- Detergent washdown system (automatic and manual)

In both steam cleaning and hot water cleaning, you must shut off the exhaust blower motor at the control panel, turn on the steam or hot water valve in the line leading to the upper part of the hood and allow it to run for 5 minutes or more, depending on how dirty the inside of the hood gets. If hot water is used, the temperature should be between 130°F and 180°F, and the closer to 180°F the better. After shutting off the steam or water, open the inspection doors on the ventilator and see if the grease and dirt have been flushed away. If the entire hood interior is still dirty, you need to leave the valve open longer. If only a certain area is dirty, you may have a clogged spray nozzle. Clean the hole in the nozzle with a small piece of wire.

During the washdown, watch the drain line from the bottom of the hood. It should run freely and should be dumping through an air gap to a deck drain. No shutoff valves are allowed in the drain line and the line should never be directly connected to a drain. Otherwise, a stopped-up drain could allow sewage to backup into the hood and spill into food and food equipment. Hand-clean all exposed surfaces of the hood including the front surface of the fire damper baffle. Watch your fingers when cleaning the damper. If the damper is accidentally tripped, it could pinch your fingers against the back of the hood.

Automatic cleaning is a timed, push-button cleaning system. A dishwasher scrubbing action with detergent and hot water is obtained by directed spray nozzle action. The nozzles are located on 8- to 10-inch centers on the cleaning pipes mounted on the interior back wall of the ventilator. The cleaning cycle is activated each time the blower serving the ventilator is stopped by pushing the STOP button on the exhaust control and cleaning station. This shuts off the blower and releases detergent and hot water into the ventilator for a preselected and preset time on the adjustable timer in the exhaust control and cleaning station.

After the cleaning cycle has been completed, follow the same steps as previously explained in manual cleaning, except clean the detergent tank and refill, if needed, with the correct detergent. Note that the timer for the automatic wash cycle is located in the stainless

steel cabinet that houses the exhaust control and cleaning station. The length of the automatic wash cycle is adjustable and should be adjusted for the minimum time that will satisfactorily clean the hood. This will conserve utilities and detergent.

The hot water shutoff valve, usually located in the cleaning station cabinet, should always be left on unless plumbing repairs are necessary. On some ships, where low water pressure or the amount of hot water available is a problem and where all galley hoods are connected to a single automatic wash system, installing activities have found it necessary to install individual shutoff valves in the hot water/detergent line at each ventilator hood. In these cases, be sure only the valve at the hood to be cleaned is turned on. If you have an arrangement like this, for fire protection purposes, leave the valve to the hood serving deep-fat fryers turned on and all others off, except when they are actually being washed. Directions for priming the detergent pump are located most often on the inside of the door. Motor bearings on the detergent pump should be oiled once every 6 months.

DOUGH TROUGH

A dough trough is the container in which dough is placed during the fermentation period. It is an oblong boxlike trough of steel construction equipped with four casters to permit easy movement in the bakeshop area.

Dough troughs are of various lengths and are designed to hold approximately 90 pounds of dough to a foot, or 50 pounds of flour to a foot. If the trough is too long for the amount of dough to be fermented properly, dam boards maybe inserted so that the correct amount of space is available.

DOUGH PROOFERS

Dough proofers or fermentation rooms are used for conditioning dough and cooling baked bread. The air temperature and air moisture (humidity) in a dough proofer are kept at preset levels by automatic controls. Dough proofers are thermally insulated enclosures and vary in size from a small box with shelving to a room with space for many portable bread racks. The dough proofer is heated by steam coils or electric heating elements located inside the enclosure, or by self-contained air-conditioning units connected to the proofer by air ducts. For shipboard use, steam-heated dough proofers are furnished in various sizes; the number and size of the proofers depend on the capacity of the bake ovens installed in the bakery on board ship.

Operation

The operation of all dough proofers is basically the same regardless of the size of the proofer. Air within a proofer should be kept at a preset temperature and moisture level. Dough proofers require at least 1 hour to attain the proper atmosphere; the unit should be started well in advance of anticipated use.

The time and temperature used to proof bread dough in the proofer should be as specified on the recipe card. Turn the steam valve on full and open the petcock to provide the necessary amount of steam for humidity. Adjust the steam inlet valve to obtain the desired temperature. When the temperature and humidity are correct, place the pans of dough into the proofer and close the door.

Watch the time closely and test the dough periodically by pressing the fingers into it. If the depression is filled by rising dough, fermentation is progressing properly. To reduce fermentation, cover the bread pans with cloths and reduce the proofer temperature. At no time should there be more than 35 pounds of steam pressure allowed to pass through the steam coils of the proofer. Drain the condensation from the drip pan at regular intervals by opening the petcock.

Care and Cleaning

Proofers should be maintained in a safe, sanitary, dust-free, rust-free, nonleaking, and economical operating condition. The enclosures and accessories should be kept free of flies, ants, cockroaches, mice, and rats.

Clean the floor, walls, top, and inside of the door. Scrape sides, corners, and guide rails with a putty knife. Scrub the floor with along-handled scrub brush and hot machine-detergent solution; rinse and dry. Wipe guide rails and ledges thoroughly. Remove and clean water pan; rinse and wipe dry. Scrub exterior and underneath if space permits; flush with hot water.

BREAD SLICER

The bread slicer is a machine with small thin blades. The platform on which the bread is placed is at about a 45-degree angle so that the weight of the bread will force the loaf down on the cutting blade when the machine is turned on. The cutting blades are attached to a cam shaft that has half the blades going in one direction and the other half going in the opposite direction. The reason for this is so that it will not tear the loaf while it is being

sliced. Never use your hand to push the load through the machine.

VEGETABLE PEELERS

Vegetable peelers (fig. 4-11, view A) have capacities of 10, 15, 30, or 50 pounds and have a cylindrical hopper with an abrasive-covered wall and an abrasive-covered rotary disk in the bottom. The disk has a wavy surface. This surface agitates the vegetables in such a manner that they continually present new surfaces for action by the abrasive material.

Operation

Before loading the machine, sort the vegetables so that those in any one load are of the same size and free of stones, sticks, and other hard objects. The machine should be started and the water turned into it before any vegetables are added. Do not overload the machine. The quantity of vegetables loaded should not exceed approximately 66 percent of the total hopper capacity. A larger quantity will not be thoroughly agitated.

If the abrasive surfaces of the machine are kept reasonably clean, a load of vegetables should be satisfactorily peeled in about 1 minute. Deep eyes or depressions in potatoes should be removed and

the peeling finished with a hand peeler or small knife. It is wasteful to allow vegetables to remain in the machine longer than necessary because valuable nutrients will be lost.

Cleaning

At the end of each day's use, secure the power and dismantle the machine. Lift the cover off and take out the abrasive disks; remove the peel trap and strainers; wash the removable parts, the interior, and the exterior of the machine with hot soapy water, and rinse with hot water (170°F). Be sure all food particles are washed out. Allow all parts to air dry before reassembling the unit.

ELECTRIC VEGETABLE CUTTERS

Vegetable cutters (fig. 4-11, view B) are machines that, without the use of attachments or removable parts, make three classes of cuts of vegetables—shredded, sliced, and grated. A dial control on the side of the machine allows instant changing of the thickness of the cut, even while the machine is in operation.

The entire front of the machine swings open to provide complete access to the interior for the purpose of cleaning and changing the blade. The machine should be washed with hot water immediately after it is used. The knurled knob holds the front of the machine securely when it is in operation.

Clean and scrub the knives and bowl with hot, soapy water and a very stiff brush. Rinse them well with hot water (170°F) and allow them to air dry thoroughly before reassembling.

VEGETABLE CUTTER AND SLICER

The vegetable cutter and slicer is used to cut vegetables that are to be used for cooking and for salads. The machine may be used to do as many as three different cutting jobs at once. It may be used for slicing either bias or horizontal french fries and julienne strips, and for coarse and fine chopping. The machine has a slicer adjustment for thicknesses up to one-fourth of an inch. The adjustment can be made while the machine is in motion. To make french fries or diced potatoes, the potatoes must be sized so that they will go into the machine.

When the machine is turned on, put a pan underneath the outlet to catch the water and vegetable particles and flush with water. This should be done after each use.



Figure 4-11.—Vegetable peeler (view A) and vegetable cutter (view B).

At the end of the day disassemble the machine and thoroughly clean the cutting plates and disks. Carefully inspect each part for strings of vegetables that may not have washed off.

This machine has parts that must be oiled daily to prolong the life and efficiency of the machine.

MEAT SAW

Electric sawing machines (fig. 4-12) are used mainly for cutting chilled, frozen, and smoked meats into steaks and chops. It is important to know that meat can be cut more uniformly by machine when there is still some frost in the boneless piece.

The saw is made to revolve by a mechanical arrangement of two wheels and an electric motor. The table on which the meat is laid is constructed so that you can cut the meat to any desired size. The saw blades themselves are five-eighths of an inch wide and about 10 feet long.

Operation

Before operating the saw, you must tighten the blade using only one hand to apply just enough tension to keep it from slipping. Feed the meat straight through giving

the blade a chance to cut. Do not force. Use only sharp blades. Dull blades may heat up, twist, and break.

The electric meat cutter is a dangerous piece of equipment. A great deal of care is necessary to avoid injury when you operate this machine. There are seven safety precautions that should be observed when you are operating the meat saw:

- Always wear safety glasses or impact goggles when using the saw.
- Before you cut the meat, make sure the right amount of tension is on the saw blade. There should be no flexibility whatsoever. The feel of the saw blade will be solid when the right amount of tension is applied.
- Meat being sawed should be placed firmly against the sliding tray guide with enough pressure to maintain a uniform thickness of the slices.
- Never use unnecessary force when cutting (sawing) meat. It is possible to break the blade and cause serious injury to yourself or others from flying pieces of metal.
- Always make sure the guide is securely tightened after the adjustment for the thickness of the meat slices has been determined. Set the blade guide 2 inches above the meat.
- Always keep your hands on the part of the meat that is most distant from the saw blade.
- Make sure the blade guard is in place at all times except when cleaning.

Care and Cleaning

The revolving wheels have grease chambers. Pack them frequently. Keep the machine clean. Oil it at least once a week. Always wash and sanitize the machine properly after each use or after every 4 hours of continued use. Use hot soapy water to wash the machine and rinse it with hot water (170°F). Do not drip water on the electric motor.

MEAT CHOPPER

The electric meat chopper is used to chop or grind all meats (cooked or raw) and to prepare bread crumbs from leftover bread and toast. The meat chopper is portable and maybe placed where it is needed most. It should be placed on a sturdy stand within easy reach of an electric outlet.

Operation

Usually a 3/8-inch plate is used for grinding meat. The use of a 3/16-inch plate for such grinding puts too much pressure on the grinder. The cutting edge of the

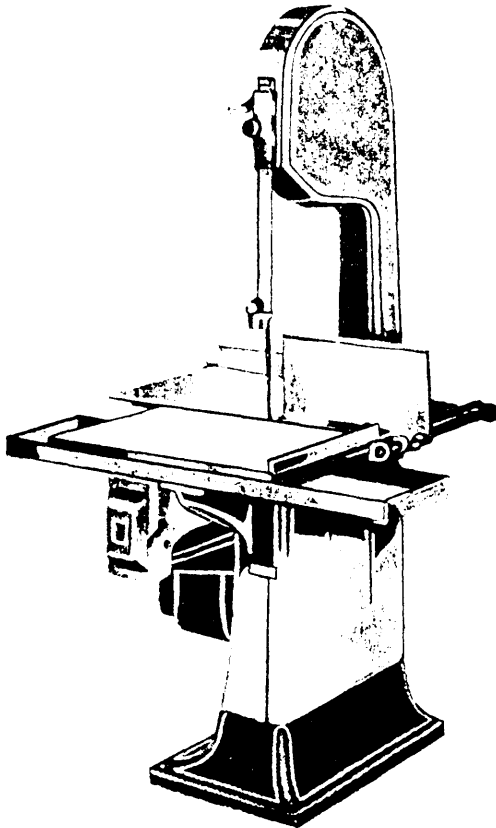


Figure 4-12.—Electric sawing machine.

knife must go next to the plate. Never forcibly tighten the adjustment ring on the chopping end, but tighten it snugly. Excess pressure will wear the chopper parts.

Start the motor, then feed the material into the chopper. Turn the motor off after the material is ground. Feed the material into the machine with the tools intended for that purpose—never with your hands.

Care and Cleaning

After meat has been chopped, take the grinder apart and wash each part thoroughly with soap and water, rinse with hot water (170°F), and allow to air dry. Do not allow food to dry on the surfaces of the chopper before you wash it. A grinder can be a breeding place for bacteria that might cause food poisoning. Great care should be exercised in keeping the parts of the grinder free from contamination.

Knives and plates should be sharpened before they get dull, but do not attempt this yourself. The engineering department should be consulted. It is a good idea to keep the same knife and plate together as they wear to fit each other. Tie them together with a cord after they are used so they will not be mislaid.

Keep the motor dry. Do not grind juicy foods, such as onions, because the juice will be forced back into the gear housing, causing a loss of oil and consequent wearing of gears.

If you are grinding foods such as crackers, grind a very small amount at a time or the machine will jam. When the chopper is hot, do not run raw meat through it. Remember that bits of bones can break the warm gears and knives.

MEAT TENDERIZER

The meat tenderizer is used to tenderize all sorts of tough meats. The machine is about 20 inches long and about 1 foot wide.

To operate, turn the motor on, insert the meat to be tenderized into the opening at the top of the machine. The meat will pass through two sets of revolving rollers that contain many small blades and will be made tender. If further tenderizing is required, insert the meat again after first giving it a one-quarter turn (90 degrees).

Meat-tenderizing machines are equipped with a safety device that automatically stops the machine when the cover (shield) is raised. Never attempt to raise the top with the machine running or to operate the machine with the cover raised because of the danger of catching your fingers in the machine. Take the machine apart and clean it after each use. Oil the parts often.

KNIVES

Many different sizes and shapes of knives are required for meat-cutting jobs. You must understand which knife to use for each job and make sure to use it for the job it was intended. You should never use the thin-bladed knife that is designed for carving cooked meats to bone a roast. It is quicker and more efficient to use the boning knife that has a stiff, narrow, short blade to cut close around bones. The knives with the long, wide blades are used to cut steaks and roasts before they are cooked.

Sharpening Knives

To get the most use out of the knives in the galley, they must be sharp. A dull knife is a hazard and makes extra work for you. A boning knife has a comparatively narrow bevel and will stand more hard use than a steak knife that has a wide bevel and a thin edge. But no matter what tool you use, you cannot do a good job unless the tool is sharp. The butcher's steel is used only to keep the edges of knives straight and not to sharpen them. Nor should you sharpen knives on a power- or hand-driven stone, since this removes the temper from the cutting edge. The best things to use for sharpening are a waterstone and a carborundum oilstone. If you use the entire stone when sharpening tools the stone will not hollow out at any one point. Draw the full blade, from heel to tip, across the length of the stone and then turn the knife over and pull it back from the opposite end of the stone. This sharpens the knife evenly and smoothly and causes the stone to wear uniformly. Always clean the blade and handle thoroughly after sharpening.

Steeling

In steeling, there is a definite technique. Specific types of steels should be used to true certain edges. Never use a rough steel. A smooth steel should be used to keep the blade in perfect condition and to maintain a keen edge. The steel should have good magnetism in order to hold steel particles. The easiest and most effective methods of steeling a knife are as follows:

- Hold the steel firmly in the left hand, thumb on the top of the handle under the guard, with the point upward and slightly away from the body.
- Place the heel of the blade against the top side of the tip of the steel. The steel and the blade should meet at an angle of about 25 degrees.
- With a quick swinging motion bring the blade down across the steel toward the left hand. This should pass the entire edge lightly over the steel.

- Bring the knife into position again but with the blade against the bottom side of the steel. Then, repeat the same motion of passing the blade over the steel.

- Repeat the motion, alternating the knife from side to side; a dozen strokes will true the edge. Steel your knives as often as necessary to keep their edges straight.

Care of Knives

Never throw knives into a drawer with other cutlery or tools. It is a good idea to have a knife rack for each watch fastened to some convenient place in the galley. Do not use knives to open cans, cut wire bands, or open cases of foodstuffs.

DISHWASHING MACHINES

Proper operation and care of dishwashing machines are vital to the sanitation, safety, and efficiency of your

activity, so you must know your machines and follow directions for their use and maintenance.

Dishwashing machines used in the Navy are classified as one-tank, two-tank or three-tank machines. The three-tank machine is a fully automatic, continuous racking machine that scrapes, brushes, and provides two rinses. It is used at major recruit installations and other large activities.

Single-tank Dishwashing Machine

Single-tank machines (fig. 4-13) are used in small ships or small messes whereby installation of larger dishwashing machines is not feasible and practical.

Wash and rinse sprays are controlled separately by automatic, self-opening, and self-closing valves in the automatic machine, or by handles in the manually operated machine. The automatic machine provides for a 40-second wash and a 10-second rinse; for manually

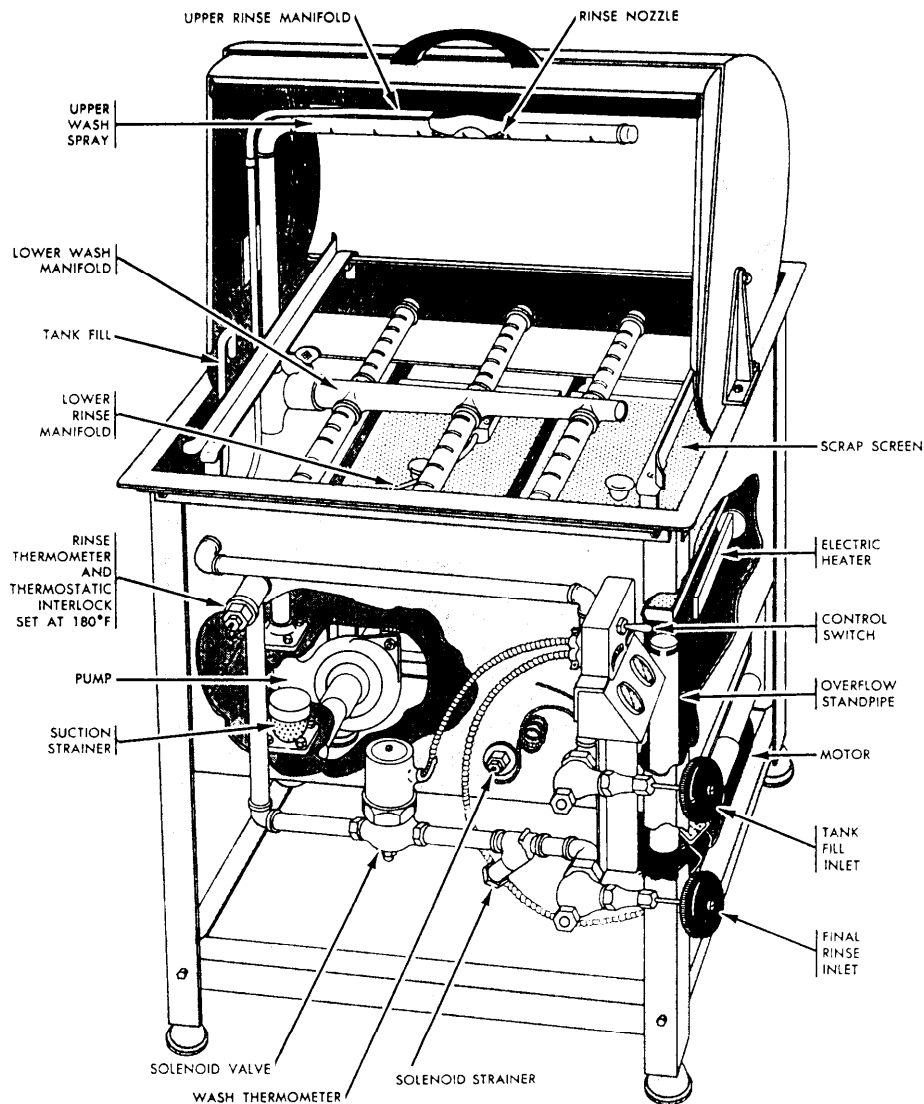


Figure 4-13.—Single-tank dishwashing machine.

operated machines, wash and rinse intervals are controlled by the operator who should allow a 40-second wash and a 10-second rinse.

To control the bacteria to a satisfactory minimum in single-tank machines, it is necessary that the temperature of the wash water in the tank be 140°F to 160°F. Therefore, a thermostat is provided in the automatic machines to prevent operation when the temperature of the water falls below 140°F.

Rinsing is done by means of spraying hot water on the dishes from an outside source and is controlled by an adjustable automatic steam-mixing valve that maintains the temperature of the rinse water between 180°F to 195°F.

Double-tank Method

Double-tank machines (fig. 4-14) are available with several different capacities and are used when more than 150 persons are to be served. These machines are provided with separate wash and rinse tanks. They also have a final rinse of hot water that is sprayed on the dishes from an outside source. This spray is opened by the racks passing through the machine. The spray

automatically closes when the rinse cycle is completed. The final rinse is controlled by an adjustable automatic steam-mixing valve that maintains the temperature between 180°F to 195°F. Double-tank machines are also equipped with a thermostatically operated switch in the rinse tank that prevents operation of the machine if the temperature of the rinse water falls below 180°F. The racks pass through the machine automatically by means of conveyor chains. The two-tank dishwashing machine should be timed so that the utensils are exposed to the machine sprays for not less than 40 seconds (20-second wash, 20-second rinse).

Triple-tank Dishwashing Machines

Some shore activities have triple-tank dishwashing machines installed. The procedures of operation are basically the same as with double-tank machines with the following exceptions:

- The dishwashing machine consists of prewash, wash, and rinse sections with a final rinse.
- Refer to the manufacturer's operating and instruction manual for the preset temperatures of the

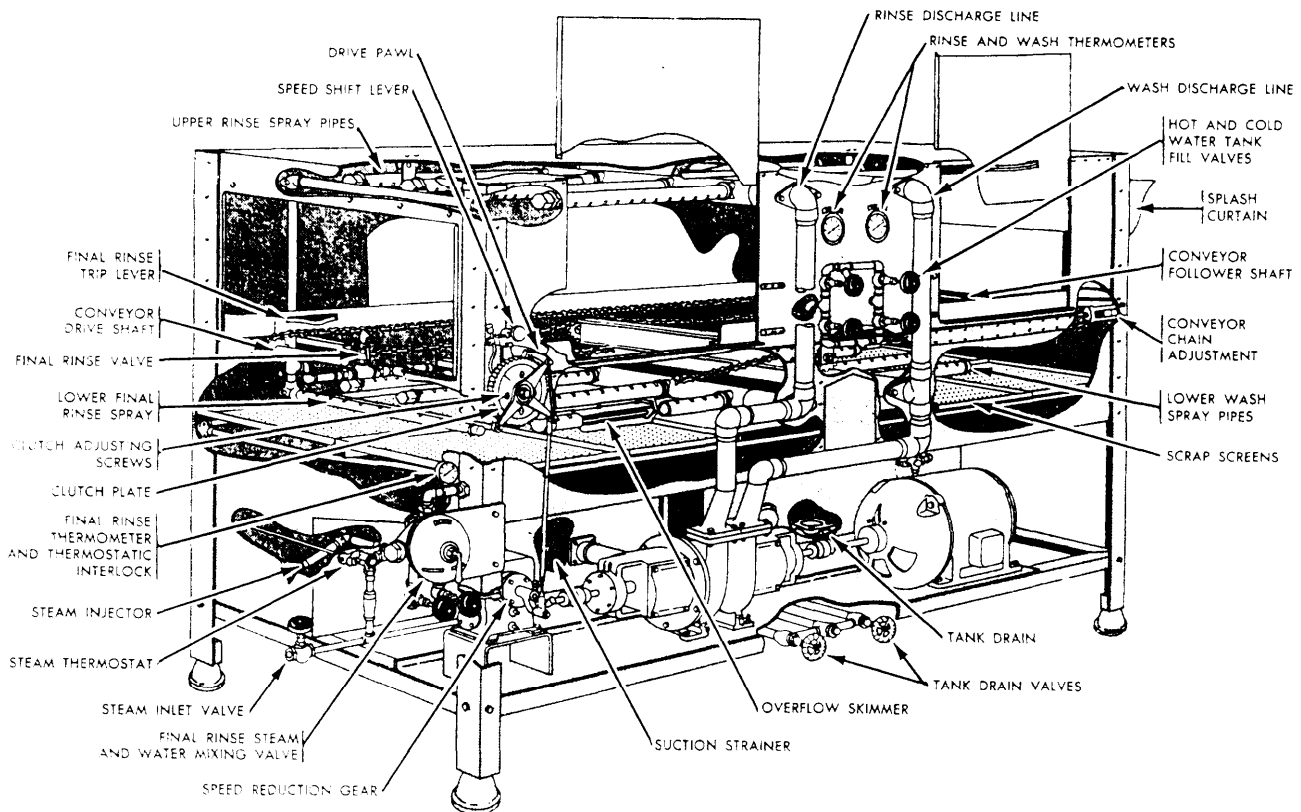


Figure 4-14.—Double-tank dishwashing machine.

prewash, wash, and rinse sections. The final rinse should always remain the same (180°F to 195°F).

OPERATING THE DISHWASHER

The first thing you should do is to read and become familiar with the operating instructions included on the instruction plate that is mounted on the hood of the machine you are operating. Always follow these instructions. Otherwise, you may damage the equipment or injure yourself and others.

The following detailed instructions are given for double-tank machines since most machines in service are of this type. These directions are also generally applicable to single-tank units, except for wash and rinse time intervals and temperatures.

1. Inspect the machine to make sure the scrap screens are in place, spray arms are capped and adjusted so that the spray hits the utensils directly, and splash curtains are in place and not hanging closer than 5 inches to the conveyor.

2. Close the drain valves to the wash and rinse sections of the machine. Open the hot water fill valves and fill the tanks to the full mark on the water level indicator.

3. Open the steam valves and allow the temperature of the water to reach 180°F. Adjust the mixing valve to the HOT position to maintain a temperature range of 180°F to 195°F. On machines with hot water booster heaters installed, open the hot water and steam valve to the booster heater.

4. On machines without automatic detergent dispensers, add the prescribed amount of detergent.

5. Push the START button to start the pumps and conveyor and run the machine for 2 minutes to thoroughly mix the detergent and bring the temperature of the wash tank up to 140°F or above.

6. Look inside the ends of the machine to make sure the power sprays are operating properly.

7. During the operation of the machine keep a close check on the temperature gauges and make sure they are within the following temperature ranges:

- Wash: 140°F - 160°F
- Rinse: 180°F-195°F
- Final rinse: 180°F - 195°F

8. Place the dishrack on the conveyor carefully and allow the conveyor to push the rack through the

machine. If the conveyor is properly set, the utensils will receive a 20-second wash and a 20-second rinse.

9. As the dishrack approaches the end of the machine, it will pass a lever that will actuate the final rinse. Observe the final rinse temperature gauge for correct temperature (180°F- 195°F).

10. Allow all dinnerware and silverware to air dry for at least 1 minute after passing through the machine.

11. Place the clean, air-dried dinnerware and trays bottom side up in a clean storage cabinet or dispenser.

12. Place an empty cylinder over clean, air-dried silverware; invert and place in a clean storage cabinet.

13. For every 30 to 45 minutes of continuous machine operation, the wash tank should be drained and the scrap trays cleaned. Check the machine temperatures frequently using a pocket thermometer (0°F-200°F) to assure the accuracy of the temperature gauges.

The washing of silverware is often unsatisfactory because too much silverware is placed in the rack to be thoroughly cleaned. The proper procedure for washing the silverware is to sort the silver and place 15 to 20 pieces in each cylinder-shaped compartment; run the silverware through the dishwashing machine with the service end up. When the wash-rinse cycle is complete, the sanitized silver should be stored by inverting it in the cylinder-shaped containers; thereby the washing and sanitizing is done without having to touch the utensils.

CLEANING THE DISHWASHING MACHINE

The dishwashing machine must be thoroughly cleaned after each meal or use. The following procedures are to be followed:

1. Turn the machine off.

2. Secure the steam and hot water valves to the final rinse mixing valve, or the steam and hot water valves to the hot water booster heater.

3. Add 3/4 to 1 1/2 cups of dishwashing machine detergent to the rinse tank, depending on the capacity of the rinse tank.

4. Turn the machine on and allow it to operate for 5 minutes.

5. Turn the machine off and secure the steam valve to the rinse tank.

6. Open the drain valves to the wash and rinse tanks; open the doors and allow the machine to cool.

7. Remove the doors, scrap screens, metal frames, wash and rinse spray arms, pump intake strainer, drain strainer, and splash curtains. Wash thoroughly in the utensils wash sink and rinse.

8. Using hand-dishwashing detergent and water with a nylon-bristled brush, thoroughly clean the inside and outside of the machine. Rinse with clean water to remove all loosened dirt and detergent.

9. Reassemble the machine, close the drain valve to the wash and rinse tanks.

10. Fill the tanks one-half full of water, open the steam valve to the rinse tank and allow the temperature to reach 180°F.

11. Turn the machine on and operate for 5 minutes without detergent.

12. Turn the machine off, close the steam valve to the rinse tank, and open the drain valves to the wash and rinse tanks.

NOTE: Follow the same basic procedures for the single-tank dishwashing machine with the exception of steps 1 through 4.

DESCALING DISHWASHING MACHINES

The interior of the dishwashing machine and the manifold(s) should be inspected monthly for accumulation of calcium or lime deposits. If deposits are evident, the machine must be descaled.

Descaling the machine should be a part of the PMS and is the responsibility of the foodservice division. The descaling operation must be closely supervised from start to finish, and personnel must wear face shields, chemical safety goggles, rubber gloves, and rubber aprons when handling acid.

These descaling procedures should be followed:

1. Drain wash/rinse tanks, if applicable.

2. Install overflow pipes, scrap trays, screens, spray manifolds (except final rinse), and curtains (inlet and discharge ends only). Place final rinse spray manifold on top of scrap tray in wash tank.

3. Shut drain valves.

4. Fill tanks to within 2 inches of top of overflow pipes with clean hot water.

5. Add 7 fluid ounces of orthophosphoric acid and 1 fluid ounce of rinse additive for each gallon of water per tank. These items can be obtained through the supply system.

6. Complete filling the tanks and close the doors.

7. Start the machine and operate for 1 hour maintaining normal operating temperatures (150°F- 160°F wash and 180°F-195°F rinse).

8. Stop the machine and open the drain valves. Completely drain acid solution from machine.

9. Inspect the interior of the machine. All the parts should be free of calcium or lime deposits and metal should be shiny.

10. Repeat steps 3 through 8 if necessary.

11. Close drain valves and fill tanks with clean hot water. Add 2 cups of dishwashing compound per tank.

12. Close doors, start machine, and operate for 5 minutes at operating temperatures.

13. Stop machine and completely drain tanks.

14. Refill and flush tanks with clean water to remove all traces of acid and detergent.

NOTES: (1) In the absence of orthophosphoric acid, only USDA-approved chemicals for descaling machine should be used, follow manufacturer's instruction.

(2) If tank capacity in gallons is unknown, multiply length (inches) times width (inches) times depth to overflow (inches) and divide by 231.

(3) Acid drained from the machine should be disposed of according to local regulations (shore stations and ships in port).

GARBAGE GRINDER

Garbage grinders are found in sculleries and deep sinks. They are used to dispose of food from plates, unused food items, and other wet garbage. Always read the operating instructions posted near the grinder before using.

To clean the tank, dump a bucket of strong, hot detergent solution into the tank and scrub the interior. Rinse by flushing the interior walls with hot water. Clean exterior by scrubbing with hot detergent solution, then rinse.

STEAM TABLE

Steam tables are used for serving hot foods. There are several types: (a) those with water compartments heated by steam coils at 40 psi of pressure or less; (b) those with steam-heated water compartments and dish warmers; (c) those with water compartments heated by immersion-electric heating elements; and (d) dish warmers.

Most steam tables used in general and private messes today are immersion-electric heating element types.

Operation

Do not overload food pans. An excessive amount of food makes it difficult to maintain the correct water compartment temperature which is between 180°F to 200°F. If, on the other hand, water in the steam table is allowed to become hotter than 200°F, the food will dry rapidly and continue cooking from the excess heat. You can correct this by adding more water to reduce the heat. Because food tastes best if served within 30 minutes (preferably within 15 minutes) after being placed on the steam table, do not place food pans on the steam table too early.

Care and Cleaning

After each meal, drain the steam table, wash the tanks with hot soapy water, and rinse with very hot fresh water of at least 180°F. Wash the top and front of the steam table to make it bright, clean, and sterile; then wipe it dry with a clean cloth.

ELECTRIC TOASTERS

Electric toasters used in the galley and dining area are the intermittent and rotary types. The intermittent type is composed of chrome-plated steel and has a vertical oven with two to four openings for inserting the bread slices. The continuous type has a chrome-plated heavy-duty conveyor with motor-driven trays for the bread.

Rotary toasters are cleaned by first disconnecting the power. After toaster is cooled, remove pan, slide, and baskets. Use soft brush to remove crumbs from front surface and behind bread racks. Wipe clean frame as far as is accessible with warm hand-detergent solution. Use a nonabrasive cleaner to remove stubborn spots. Clean baskets by boiling in hot detergent water. rinse, and air dry. Then, clean and replace all parts.

SHAPER, POTATO MIX (EXTRACTOR)

Potato shapers are used to reconstitute dehydrated potatoes into formed french fries. They are available with optional shaping heads and a conveyor. Some of the shaper accessories are dicers, onion rings, steak fries, shoestrings, and hash-browns.

Follow the manufacturer's instructions and procedures of operation and cleaning of this equipment.

REFRIGERATORS

Refrigerators are designed for storing foods for short periods of time. Most refrigerators installed aboard ship have movable bars that fit in front of each shelf to keep the contents of the refrigerator from moving or falling out when the door is opened. At sea, food must be stored in such a way that it will not move around when the ship rolls. To keep a refrigerator operating at top efficiency, three things are important:

- Keep it clean.
- Do not overload it.
- Defrost it regularly and properly.

Defrosting

You may defrost the refrigerator on a schedule or when the frost accumulation requires it. The number of times that a refrigerator requires defrosting depends, of course, on the rate at which frost builds up on the cooling unit. Ice formations should never be more than one-fourth of an inch thick because ice and frost act as insulators and reduce efficiency.

Defrosting is done by turning off the refrigerator; removing all food, and blocking the doors open. Defrosting may be speeded up, however, by placing pans of hot water in the freezer compartment. Do not scrape or chip the ice from the cooling coils as they are easily damaged, and do not pour hot water over the ice accumulation to melt it.

Cleaning the Refrigerator

A refrigerator that is not thoroughly clean will quickly develop a bad odor and the foods in it will spoil. Cleanliness avoids the growth of mold and bacteria that often cause food poisoning. A refrigerator should be cleaned at least once a week and after each defrosting. Never use a water hose in cleaning a refrigerator. The

fluid may seep into the insulation and cause permanent damage. The proper cleaning procedures are as follows:

1. Wipe the gaskets around the door of the refrigerator to remove any oil or grease.
2. Wash the inside surfaces and food shelves with a hot detergent solution of water.
3. Rinse them with a warm solution of baking soda, using 1 tablespoon of soda to 4 quarts of water.
4. Dry all surfaces thoroughly after flushing out the drain with hot water.
5. Clean the outside with warm water, rinse, and dry.

Avoid Overloading

Never overload a refrigerator. An overloaded refrigerator cuts down air circulation and is hard to clean. To prevent overloading, limit the amount of food you draw from bulk storage at any one time. When you draw food that must be kept in the refrigerator, do not ask for more than you can store in your ready-service refrigerator.

REFRIGERATED SALAD BAR

Mechanically refrigerated self-service cold food counters with refrigerated (salad bars) storage compartments are procured in various sizes from three- to six-pan compartment capacity with either a single door or double doors underneath storage areas.

Operation

Usually the refrigeration to the top section of the salad bar is controlled by a separate switch. This switch should be turned on approximately 1 hour before putting the salads on the salad bar to allow the temperature to drop below 40°F.

Defrosting and Cleaning

The refrigerated salad bar should be defrosted and thoroughly cleaned after each meal. Steps in defrosting and cleaning are as follows:

1. Turn off the switch of the top unit and allow it to defrost freely. Do not use any metal objects to remove ice as it may puncture the coils.
2. To clean, remove all inserts of salad and dressings and return them to the vegetable preparation room.

3. Discard the ice.

4. Using the two-pan method, you should clean and rinse the salad bar and allow it to air dry. Special attention should be given to the drain to make sure it is free of food particles and is draining properly.

5. To clean the storage section of refrigerated salad bars, follow the same procedures as for the top unit, paying particular attention to the drains and door gaskets.

6. Clean the sneeze shield, legs, and metal frame.

7. Clean the exterior of the salad bar as recommended by the manufacturer's technical manual.

REFRIGERATED MILK DISPENSERS

Refrigerated milk dispensers are used to dispense bulk milk. They are available with one, two, or three dispensing units. The size of the mess and the number of personnel fed will determine which milk dispensing unit is installed.

Operation of the Milk Dispenser

Before loading the machine, you should make sure the temperature range is from 32°F to 40°F. Fill the milk dispenser. Cut the milk dispensing tubes with a clean, sharp, disposable plastic knife at a point one-fourth of an inch below the dispensing valve opening.

Care and Cleaning

After each meal, clean the exterior with a mild solution of hot detergent water, making sure the base of the machine around the legs, metal seams, and the edges under the dispenser opening and door are thoroughly cleaned. Remove and disassemble the metal dispensing valve and run it through the dishwashing machine.

Defrost the milk dispenser when the ice reaches a thickness of one-fourth of an inch using the procedures that follow:

1. Remove milk containers and place them under refrigeration while defrosting.
2. Turn off electric power supply; open the door and allow the machine to defrost freely.
3. Do not use metal objects to dislodge ice.
4. After defrosting, clean the interior of the machine using the two-pan method. One pan contains 2 tablespoons of liquid detergent to each gallon of hot water which is applied with a nylon-bristled brush. Pan

number two contains hot clean water or a sanitizing solution which is applied with a clean sponge.

5. Special attention should be given to the door gaskets to prevent damage and deterioration.

6. After defrosting, cleaning, and wiping dry, you should turn the electric supply back on.

SOFT-SERVE ICE-CREAM MACHINE

This machine is usually located in the messing area and the patrons serve themselves. The MSs are responsible for preparing the ice-cream mix and cleaning and sanitizing the machine. It is a must that the machine be sanitized before and after each use. Follow the procedures of operation according to the technical manual or the operation procedures posted next to the machine.

Cleaning After Each Use

Soft-serve ice-cream machines are very susceptible to a rapid bacterial growth of even a little amount of ice-cream mix left in the machine or on any area the mix contacted. Therefore, following the procedures in cleaning the machine are very important. The procedures are as follows:

1. Empty freezer and flush with cold water until water runs clear.

2. Rinse again with warm water (120°F).

3. Place 1 gallon of hand-dishwashing detergent and water (140°F) solution into the hopper. Move the switch to the WASH position and operate for 2 minutes. Draw off water solution.

4. Rinse the interior of the machine with clean water.

5. Remove all detachable parts, freezer door assembly, and drawoff plunger, beater, blades, and beater drive shaft, mix feed assembly, and hopper cover assembly.

6. Wash all parts in detergent solution and brush all surfaces. Brush inside of freezing cylinder; pay particular attention to the back wall and shaft connection. Rinse all parts thoroughly and allow them to air dry.

7. Store all clean parts in a clean storage area until next use.

Sanitize the Machine Before Use

Prepare sanitizing solution according to package directions on calcium hypochlorite or disinfectant

foodservice. Wear disposable gloves when assembling the machine. Dip each part in solution as machine is assembled. Pour remaining solution into the hopper and brush solution over entire inside and lid. Let the machine runs for 1 minute to allow the solution to run through the mixer. Drain completely and the machine is ready for use.

COFFEE MAKERS

Coffee makers used in the GM are normally electric and may be of different types. The automatic twin coffee urn and the automatic coffee maker (figs. 4-15 and 4-16) are the types used most often in general and private messes.

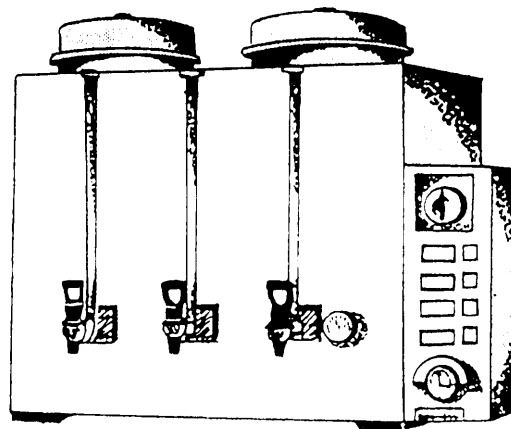


Figure 4-15.—Automatic twin coffee urn.

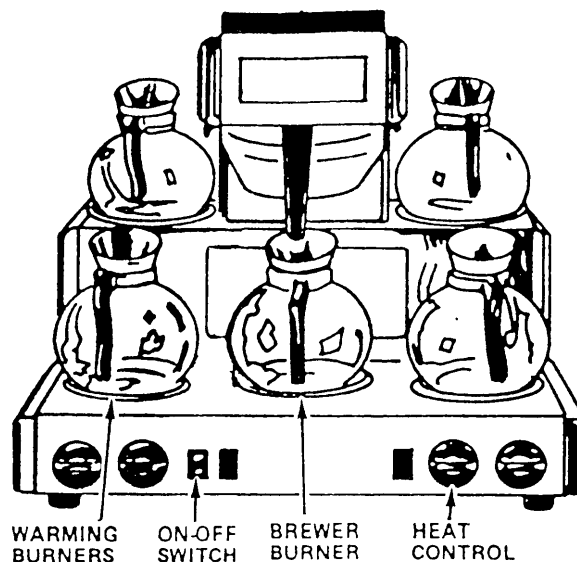


Figure 4-16.—Automatic coffee maker.

Operation of the Automatic Twin Coffee Urn

To brew coffee, turn thermostat dial to the BREW position. Observe dial thermometer on front of the urn. When brewing temperature is at the high end of brew zone on dial, the urn is ready to brew coffee.

Place paper filter or muslin leecher bag in brew basket. Place desired amount of coffee in filter (use urn grind coffee in 3-gallon urn and regular grind in larger urns), replace cover, and place brew basket in position over coffee liner. When using muslin bag, be sure bag is soaked with cold water before using, and, if a new bag, be sure to wash out all sizing with warm water. Swing spray arm from the PARK position over brew basket and center spray nozzle over brew basket. Push timer knob. After the timer has completed its cycle, the orange brewing light will go out, showing that the proper amount of water has been sprayed. Within 3 minutes the brew basket with spent coffee grounds should be removed from urn. To do so, swing spray arm back to center PARK position. The spray arm should always be parked in this center position so expansion drippage will go back into tank. Do not leave the brew basket in liner over 5 minutes, if possible. Remove cover and brew basket and then always replace cover over coffee liner. Rinse out muslin leecher bag and store in cold water until ready to use.

Keep the thermostat dial at the HOLD position during all standby periods so that the urn is ready to brew coffee at any time, with no waiting. Merely turn thermostat to the BREW position so the pilot light lights up during brewing. During shutoff periods, turn thermostat to OFF. After all night or weekend shutoff, a minimum of at least 55 minutes is required to obtain the proper brewing temperature. On twin models, water for tea may be drawn from center faucet. Manual refill is required unless equipped with auto refill.

Care and Cleaning of a Coffee Urn

The procedures used in caring for and cleaning a coffee urn are as follows:

1. Always rinse urn immediately after each use.
2. Add small quantity of hot water, brush sides, and rinse with hot water until it runs clean. Urn is now ready for next batch.
3. At end of each day clean and brush urn several times and then rinse thoroughly with hot water.

4. Remove cleanout cap at end of coffee faucet (or take apart faucets that have no caps) and scrub pipe leading to center of urn. Clean urn gauge glass with brush and urn cleaner. Rinse thoroughly.

5. Scrub the faucet and then rinse it thoroughly with hot water.

6. Place a gallon or more of fresh water in urn until next use.

7. Remove cover and clean. Replace cover and leave partly open.

8. Always remember to empty and rinse the urn with hot water before using again.

NOTE: On automatic urns, use any of the BREW, START, STOP, or RINSE switches to spray scalding hot water into the liner for cleaning and rinsing. On Pour-over urns, draw hot water directly from urn. Make sure urn water tank is kept nearly full and the heat is on.

Destaining a Coffee Urn

The procedures for destaining coffee urns are as follows:

1. Fill urn with destaining compound solution. Fill urn with water 175°F. Add destaining compound (stain remover, tableware, in this ratio: 2 tablespoons per 5 gallons of water or as directed by manufacturer).

2. Draw off mixture and repour. Open spigot and draw off 1 gallon; thoroughly remix to allow mixture to come into faucet. Allow solution to stand for 1 hour at 170°F to 180°F. Stir occasionally.

3. Scrub urn liner and gauge glass. Use long-handled brush to loosen scales.

4. Clean faucet. Take faucet valve apart and clean all components. Soak in hot water until reassembled.

5. Rinse and reassemble faucet valve. Rinse urn liner three or four times carefully with hot water. Repeat until all traces of compound are removed.

Operation and Care of an Automatic Coffee Maker

The automatic coffee maker is designed to brew fresh coffee under strict, sanitary conditions. Each coffee maker is made in units, and each unit may contain four or five burners set in a single or double deck. The coffee maker has the ON/OFF switches and the head control switches on the front. Glass or metal bowl

containers are supplied for the actual brewing of the coffee.

Automatic coffee makers let you pour fresh water into a reservoir at the top of the device to obtain the same amount of hot coffee. In some models, gravity displacement of preheated hot water by cold water is the working rule. In others, water is brought to a boil before brewing a batch of coffee.

In using an automatic coffee maker, there are two phases in making coffee, preheating and brewing. The preheating phase consists of the following steps. Slide the brewing chamber under the spray head and place an empty decanter under it. Then open the top cover and pour two decanters of cold water in the reservoir. Replace cover. Make sure to plug into electric outlet of the correct voltage (specified on the nameplate of device). It should be noted that the two decanters of cold water should be poured in before connecting the plug. Preheat time is usually 18 minutes, and a signal light will turn on when the water reaches the proper brewing temperature.

Brewing good coffee requires skill, technique, and the experience of the skilled foodservice specialist. To properly brew coffee, remove the brewing chamber and place one paper filter in it. Add required amount of the recommended coffee grind. Check to be sure the coffee is evenly leveled before replacing brewing chamber. After the preheating phase, add a decanter of cold water to the reservoir. Coffee will immediately start to brew and flow into the decanter under the brewing chamber. When the flow stops, you are ready to serve.

The simple care of your equipment makes an important contribution to the excellence of your coffee service and efficient use of energy.

All parts of the brewer that come into contact with the coffee and coffee vapor should be kept immaculately clean. Decanters, for example, should be thoroughly cleansed and rinsed free of detergent after each use. Spray heads should be checked regularly for traces of lime or other deposits in or around the holes. It is important to keep them clean.

Paper filters should never be reused as they can pick up odors from other foods. Discard after each brewing process. Be careful where you store them.

Cloth filters should be rinsed after each brew and stored overnight in a vessel of fresh cold water. Replace cloth filters often to ensure good-tasting coffee. A simple sniff test should tell you when it is time to change.

New cloth filters should be cleaned and rinsed in very hot water to remove sizing (starch) and cloth odors. Do not use soap, bleaches, or detergents since they transfer flavors.

If you brew in sealed filter bags with a stainless steel filter screen, rinse out the holding cartridge and screen daily. Once a week soak the screen overnight in a solution of urn cleaner and rinse thoroughly before reusing.

ICED TEA DISPENSER

The iced tea dispenser is used with instant powdered tea and provides a convenient method of serving iced tea at meals.

Operation

Instant tea comes in a sealed jar, ready for use in the dispenser. To get the machine in operation use the following procedures:

1. Remove lid and seal from instant tea jar.
2. Replace with dispensing funnel by screwing it on firmly. Do not touch internal components of funnel assembly.
3. Insert jar and funnel in tea dispenser. It is now ready for operation.
4. To operate, fill a glass with ice and place it directly under the spout. Press the glass lightly against the actuator and hold until glass is filled.

The tea dispenser is preset to produce a beverage suitable for the average consumer but can be adjusted to produce stronger or weaker tea.

Cleaning

Remove bottle and funnel assembly by sliding straight out of coil shield hole, then remove funnel assembly from jar. Using the two-pan method, wipe the exterior components. Empty the drip pans. Wash the drip pan and the grill with mild detergent and warm water. Do not soak plastic parts in hot water or wash in dishwashing machine. To prevent gumming of the instant tea dispenser, make sure all component parts are thoroughly dry before inserting anew bottle of tea. The machine should be cleaned after each meal.

NONCARBONATED BEVERAGE DISPENSER

Noncarbonated beverage dispensers are usually located in the dining area to dispense fruit juices, lemonade, iced tea, and other popular beverages. These dispensers have a self-contained refrigeration unit and a circulating pump to keep the beverages thoroughly mixed and to promote uniform cooling. The beverages are dispensed from a clear plastic tank.

Operation

Fill the tank well in advance of the meal to assure a properly chilled beverage. To facilitate chilling, beverages should be prepared in advance and prechilled. Ice should not be used to chill the beverage at the time of preparation. As a beverage is being dispensed, make sure to empty and clean the drip pans as necessary and wipe up any spillage immediately. Turn off the refrigeration unit and circulating pump when the machine is not in use or the tank is empty.

Cleaning

The dispenser should be disassembled and thoroughly cleaned after each meal or when used. Use the following procedures:

1. Turn off the electric power supply to the machine.
2. Drain the beverage from the dispenser.
3. Disassemble the dispenser. Clean the exterior of the exposed dispenser using the two-pan method. Make sure the base of the dispenser (legs) and the dispensing valve openings are also cleaned.
4. Wash the removed items in warm detergent and water, rinse with clear hot water to remove all traces of detergent, place in a sanitizing solution, and allow to air dry. Do not use any abrasive cleaners and do not place in the dishwashing machine. Reassemble the dispenser after it has air dried.

An extensive weekly cleaning at the base of the dispenser should be done that includes vacuuming inside the unit and wiping the exposed areas of the dispenser. Make sure the power is off and exercise extreme caution when doing this procedure.

BULK ICE-MAKING MACHINE

This machine requires little maintenance by foodservice personnel, but should be closely monitored.

Ice is easily contaminated; therefore, the following strict measures should be taken:

- Only authorized personnel should have access to the machine. The ice bin should be locked.
- The ice scoop should be stored dry outside the ice bin or inside the bin at a height above maximum ice level.

A monthly cleaning is required. Thoroughly clean the interior of the bin with a mild detergent and water solution using a nylon-bristled brush, then flush with clean water until all traces of detergent have been removed. Adequate rinsing with water containing 2-ppm chlorine should be used to eliminate bad odors and the accumulation of film deposits from detergents.

ICE-DISPENSING MACHINE

These machines are highly appreciated by the dining patrons, particularly during the hot months of the year. It is recommended that the machine be secured except during meals to make sure a sufficient supply of ice is available. If the machine becomes empty during service, it should be immediately disconnected or turned off to prevent damage to the dispensing assembly.

To clean the machine without disassembling the unit, you must shut off water, then pour 1 quart of mild detergent solution slowly into water reservoir and let ice form from cleaning solution. Discard ice and shut off the machine. Flush the ice-making system by adding 1 quart of clean water to the reservoir. Discard the ice. Wash down the storage bin with a mild detergent solution and rinse thoroughly with clean water containing 2-ppm chlorine. Areas in and around motor, insulation panels, and condenser coils should be vacuumed to free them of lint and dust. Periodic weekly checks for cockroach infestation should be made.

BENCH-TYPE CAN OPENER

Can openers are often neglected in foodservice. They are used so much that when neglected they could be a ready source of food contamination. Therefore, keeping them in good operating condition and in a high degree of cleanliness is a must.

You must clean the shaft daily and after every use. Simply, lift the vertical shaft out of the base and then soak in hot detergent solution of 1 ounce to 1 gallon of water. Scrub with a stiff-bristled brush. Rinse under hot running water. Let it air-dry. The equipment is now ready for reuse or storing in clean drawer.